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THE UNIVERSITY OF NEW HAMPSHIRE
AGRICULTURAL EXPERIMENT STATION

Department of Agricultural and Biological Chemistry

Inspection of Commercial Fertilizers

Made for the

STATE DEPARTMENT OF AGRICULTURE

H. A. DAVIS and V. F. STAAB

THE UNIVERSITY OF NEW HAMPSHIRE
DURHAM, N. H.

INSPECTION OF COMMERCIAL FERTILIZERS

Made for the

State Department of Agriculture

The inspection of commercial fertilizers reported in this bulletin was made under the direction of the Honorable Perley I. Fitts, Commissioner of Agriculture. Mr. George H. Laramie, Fertilizer Control Supervisor, and Mr. Harold W. Ayer Assistant Control Supervisor, collected 120 samples of mixed fertilizer and fertilizer materials which were offered for sale by dealers or had been delivered to consumers during the year ending June, 1954. The general character of the brands sampled is shown by the following classification:

Complete fertilizer	79
Phosphoric acid and potash	12
Nitrogen and Phosphoric acid	1
Superphosphate	8
Nitrate of Soda	1
Ammonium nitrate	1
Muriate of Potash	1
Ground bone	5
Natural manures	10
Tankage	2

THE FERTILIZER LAW

Copy of the full text of the law may be obtained from the Fertilizer Control Supervisor, State House, Concord, New Hampshire. All inquiries relative to the registration of brands and of matters relating to the enforcement of the law should be addressed to his office.

The law governing the guarantees and labeling of commercial fertilizers or fertilizer materials follows:

"Every lot or parcel of commercial fertilizer or fertilizer material sold or offered or exposed for sale within this state shall be accompanied by a plainly printed statement, clearly and truly certifying the number of net pounds of fertilizer in the package; the name, brand or trademark under which the fertilizer is sold; the name and address of the manufacturer or importer; the location of the factory; and a chemical analysis stating the minimum percentage of nitrogen, of available phosphoric acid and of water-soluble potash expressed in whole numbers.

"No fertilizer or fertilizer material containing the three essential fertilizing elements, nitrogen, phosphoric acid and potash may be sold or offered for sale if the total minimum plant food nutrients contained therein is less than fourteen per cent by weight, provided, however, that natural animal and bird manures shall be excepted from the provisions of this section."

The chief purpose of the official inspection required by the fertilizer law is to protect the consumer against the misbranded products which doubtless would soon appear on the market if the sale of the fertilizer was not under state regulation. The purchaser of fertilizer or fertilizer materials should acquaint himself with the full text of the law. He should not accept from the dealer any bag of fertilizer which is not tagged and guaranteed in compliance with the law. If he does so, it is at his own risk.

The value of a fertilizer depends mainly upon its content of available plant food, particularly nitrogen, phosphoric acid and potash. Research workers in

agricultural experiment stations and industrial research groups are constantly studying the needs of the soil to improve crop yields. As a result of these studies, other plant nutrients are included in certain fertilizers for specific crops. Magnesium and boron are examples of so-called minor elements furnished by some brands of fertilizer to correct specific deficiencies of the soil in certain localities.

Soil conditioners are materials that have been widely advertised. Their main purpose is to improve soil texture. In general these materials in themselves supply little or no plant food. They are relatively expensive and their use has therefore been limited. There is no accepted method of measuring their relative effectiveness as to whether results as claimed will be obtained. These materials are still in the trial period. They apparently give good results in changing certain soil conditions.

It is well known that there is much advertising of fertilizer materials directed to the attention of the small home gardener and house plant growers. It is realized that plant food concentrate supplied in small packages has a place. However, certain advertising claims have been open to question. In fact the American Association of Fertilizer Control Officials has in the past issued a warning to the public through the press against "exorbitant and questionable claims" in regard to fertilizer materials for home garden and flower production. Generally speaking, it is more economical for the gardener to purchase fertilizer of a reliable brand and in reasonably large size packages.

All control officials charged with the enforcement of state laws regulating the sale of commercial fertilizers and fertilizer materials are joined in the Association of American Fertilizer Control Officials. Research workers employed by State or Federal Agencies engaged in the investigation of fertilizers are also members of this Association. The object of this organization is to "promote uniform and effective legislation, definitions, rulings, and enforcement of laws relating to the control of sale and distribution of mixed fertilizers and fertilizer materials in the Continent of North America." At the annual meetings of the Association reports and recommendations of investigators concerning definitions of fertilizer materials, use of new products, and problems concerning regulation of the fertilizer trade are discussed in detail. Fertilizer manufacturers are invited to participate in these discussions and through mutual co-operation the farmer is supplied with a product that can be relied upon to do the job expected in crop production. The official publication of the Association may be obtained for a small fee through the office of its secretary, B. D. Cloaninger, Clemson, South Carolina. This booklet contains the official terms describing fertilizer materials, a proposed model state fertilizer law as well as the proceedings of the annual meeting.

Whether or not a fertilizer contains the guaranteed amount of plant food can be determined only by a chemical analysis. For this reason it is considered necessary that each brand of fertilizer offered for sale be officially sampled and analyzed each year. When failure to meet the gaurantee is proved by chemical analysis, the prosecution or seizure provisions of the law may be invoked. The purchaser's refusal to buy a fertilizer which does not conform to the law will not only assist in the enforcement of the law but will at the same time insure him the protection of the law.

USE OF COMMERCIAL FERTILIZERS

It is not within the scope of this department to make recommendations regarding the use of commercial fertilizers. The Department of Agronomy and the Department of Agricultural and Biological Chemistry of the University of New Hampshire Agricultural Experiment Station test soils and conduct experimental work with various fertilizer materials on hay and crop land. The Department of Horticulture investigates fertilizer treatments for fruits and vegetables. Much of this work has been published, and is available for free distribution to residents of New Hampshire. Address your request to Mail Service, University

of New Hampshire, Durham, New Hampshire. A list of currently available publications on fertilization follows:

Sta. Cir.	58	Fertilizer Needs of Alfalfa on New Hampshire Soils. 12 pp.
Sta. Cir.	59	Effect of Soil Moisture and Fertilizer Placement on Vitality of the Potato Seed Piece. 11 pp.
Sta. Cir.	61	Fertility Needs of Dairy Farm Crops in the Connecticut Valley. 12 pp.
Sta. Cir.	63	Fertilizers for Sweet Corn. 8 pp.
Sta. Cir.	74	The Response of Clover and Total Forage to Top-Dressing Fertilizers. 12 pp.
Ext. Bull.	324	Experiment with Potatoes. 38 pp.
Ext. Cir.	210	Purchasing Lime and Fertilizer. 12 pp.
Ext. Cir.	212	Cabbage. 4 pp.
Ext. Cir.	266	Root Crops. 20 pp.
Ext. Cir.	275	Culture of Low-Bush Blueberries. 16 pp.
Ext. Cir.	309	Growing Grapes in New Hampshire. 10 pp.
Ext. Cir.	310	Cane Fruit Culture. 8 pp.
Ext. Bull.	100	Growing Apples in New Hampshire. 32 pp.
Ext. Bull.	104	Growing Vegetables at Home. 32 pp.
Ext. Bull.	105	Asparagus in New Hampshire. 16 pp.
Ext. Bull.	116	Hotbeds and Coldframes. 15 pp.
Ext. Bull.	118	Growing Potatoes in New Hampshire. 31 pp.
Ext. Folder	25	New Hampshire Recommendations for Seed, Fertilizer and Lime (Revised 10-53).

While the word fertilizer does not appear in all of the above titles, none is included which does not discuss the use of fertilizer.

FERTILIZER RECOMMENDATIONS

NEW HAMPSHIRE RECOMMENDATIONS for FERTILIZER USE

(Supplied by the Agronomy Department of the New Hampshire Agricultural Experiment Station)
(Reprinted with their permission from Extension Folder 25 revised Oct. 1953)

(To be more certain of your fertilizer recommendations, see your county agricultural agent about having your soil tested. On the basis of this test, the recommendations may vary from those shown here.)

Crop	Lime to pH	Grade of Fertilizer in Pounds Per Acre (or its equivalent)		Remarks
		At Time of Planting	Top-Dress or Side-Dress (Annually)	
New Seedings	6.5	600 lbs. 5-10-10 or 400 lbs. 8-16-16		One-half to ¾ of the commercial fertilizer may be replaced by manure. Two tons of reinforced stable manure or one ton of poultry manure is approximately equal to 100 lbs. of commercial fertilizer. If alfalfa is in the mixture, use 30 lbs. of borax per acre.
Established Stands Legumes	6.5		700 lbs. 0-14-14 or 400 lbs. 0-15-30 or 500 lbs. 0-20-20	If alfalfa is in the mixture, use fertilizer containing borax.
Legumes and Grasses	6.5		800 lbs. 5-10-10 or 500 lbs. 8-16-16	If alfalfa is in the mixture, use fertilizer containing borax.
Grasses	6.5		600 lbs. 7-7-7 or 400 lbs. 10-10-10	One-half to ¾ of the commercial fertilizer may be replaced by manure. Two tons of reinforced stable manure or one ton of poultry manure is approximately equal to 100 lbs. of commercial fertilizer.

Sudan, Millet, Rye	6.5	400 lbs. 10-10-10 or 600 lbs. 7-7-7			One-half to ¾ of the commercial fertilizer may be replaced by manure. Two tons of reinforced stable manure or one ton of poultry manure is approximately equal to 100 lbs. of commercial fertilizer.
Corn Silage Sweet Grain	6.5	1,000 lbs. 10-10-10 or 1,400 lbs. 7-7-7 or 1,000 lbs. 5-10-10 or 600 lbs. 8-16-16	Broadcast ¾ and apply ¼ in planter	100 lbs. Ammonium Nitrate when 10-10-10 or 7-7-7 is applied and 250 lbs. Ammonium Nitrate when 5-10-10 or 8-16-16 is used.	Side-dress when corn is 1 ft. high. In a wet season, use more nitrogen. One-half to ¾ of the commercial fertilizer may be replaced by manure. Two tons of reinforced stable manure is approximately equal to 100 lbs. of commercial fertilizer.
Potatoes	5.0	2,000 lbs. 5-10-10 or 1,250 lbs. 8-16-16 or 1,500 lbs. 8-12-12			Use fertilizer containing magnesium.
Home Gardens and Commercial Vegetables	6.0	1,200 lbs. 8-16-16 or 2,000 lbs. 5-10-10 or 2,000 lbs. 5-10-5 or 1,300 lbs. 10-10-10			One-half to ¾ of the commercial fertilizer may be replaced by manure. Two tons of reinforced stable manure or one ton of poultry manure is approximately equal to 100 lbs. of commercial fertilizer.
Lawns and Turfs New seedings	5.5	25 lbs. 5-10-10 or 15 lbs. 8-16-16	per 1,000 sq. ft.		Also incorporate in soil, 1 bale of peat moss (16-18 bu.) or 10 bu. of poultry manure, or 20 bu. of stable manure, or compost per 1,000 sq. ft.
Established Lawns and Turfs	5.5			10 lbs. 10-10-10 or 15 lbs. 7-7-7 per 1,000 sq. ft.	On soils low in organic matter, use an equivalent amount of an organic base fertilizer such as 10-6-4 or 8-6-2. Apply all fertilizer in split application in April and September.

Crop	Lime to pH	Grade of Fertilizer in Pounds Per Acre (or its equivalent) When to Apply	Top-Dress or Side-Dress (Annually)	Remarks
Fruit Apples	6.0	About May 1.	Use ⅛ to ¼ lb. of Ammonium Nitrate for each year of age of the tree, up to 5 lbs. per tree, depending on shoot growth.	Every 3 years use ½ lb. of borax for each mature tree. When lime is needed to correct acidity or magnesium deficiency, use only dolomitic limestone and not more than 2 tons per application.
Strawberries	6.0	Disc manure into soil 2 weeks before planting.	15 tons of stable manure or 7½ tons of poultry manure.	Mulch with hay or straw when ground begins to freeze.
Raspberries	5.5	Early spring.	10 tons of stable manure or 5 tons of poultry manure plus 50 lbs. of Ammonium Nitrate.	Cultivate shallow.
Blueberries (cultivated) Young plants	4.5	During May at 7-day intervals.	½ teaspoonful Ammonium Sulfate per plant for each foot of height.	Spread evenly under drip of plant.
Mature Plants	4.5	Two applications, May 1 and June 1.	4 oz. (⅔ cup) 10-10-10 or 6 oz. (1 cup) 7-7-7 per plant.	Spread evenly under drip of plant.

Helpful Hints

1. Reinforce stable manure with 2 lbs. of 20% superphosphate per cow per day.
2. Even though manure may replace some of the commercial fertilizer used, it is desirable to apply at least ¼ to ½ of the above amounts of commercial fertilizers in order to hasten early spring growth.
3. One ton of cow manure as it comes from the stable is approximately equal to: 50 cubic feet; 40 bushels; 0.4 cords.
4. Small and frequent applications of manure are more effective than is the same amount of manure applied in larger amounts and less frequently.
5. Equivalent amounts of other nitrogen fertilizers may be substituted for ammonium nitrate, although at a greater cost per pound of nitrogen. One hundred pounds of ammonium nitrate is approximately equal to 160 pounds of ammonium sulfate or 200 pounds of nitrate of soda.
6. If the soil test indicates a need for lime, then apply lime well in advance of adding fertilizers so as to make the fertilizers more effective.
7. Since New Hampshire soils are low in magnesium, it is best to use dolomite limestone which contains magnesium.

CONFORMITY TO GUARANTEE

The chemical analyses reported in this bulletin were made by the methods adopted by the Association of Official Agricultural Chemists.

Number of samples analyzed	120
Equalling or exceeding all guarantees	69
Deficient in nitrogen only	22
Deficient in available phosphoric acid only	9
Deficient in potash only	7
Deficient in nitrogen and phosphoric acid	3
Deficient in nitrogen and potash	4
Deficient in phosphoric acid and potash	5
Deficient in nitrogen, phosphoric acid and potash	1

Sixteen brands were guaranteed to contain magnesium oxide. One failed to meet the guarantee.

Fertilizers are largely mixtures of highly purified chemicals. Segregation of these materials in the bag is difficult to prevent. Modern methods of fertilizer manufacture are doing much to process the fertilizer in such a way that segregation will be prevented. The problem has not been satisfactorily solved as yet. To obtain a truly representative sample of a fertilizer mixture requires careful work. The chemist can accurately determine the nitrogen, phosphoric acid, and potash content of the sample sent to the laboratory. If this sample does not correctly represent the larger lot, the analytical work is of no use. The obligation of the fertilizer control program is to see that the manufacturer is supplying the guaranteed amount of plant food to the consumer. For this reason the sample must be drawn and analyzed very carefully so that injustice will not be done to either the consumer or manufacturer.

In the tabulation of the analyses in the following pages, deficiencies of one-half of one per cent or more are shown in red type. The names of the manufacturers are arranged alphabetically. The brand names are listed alphabetically, or numerically by formula, under the manufacturer.

	Sample Drawn In	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
				Total		Available					
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
A. G. Products East Kingston, R. I.											
*Meadow Brand Sheep Manure	Dover	1.25	1.38	0.30	0.23	.....	.....	2.00	2.45	.....	.....
American Agricultural Chemical Co. North Weymouth, Mass.											
*Agrico Phosphate and Potash 0-10-20	Concord	.....	.....	.....	10.70	10.00	10.42	20.00	20.01	.....	.....
*AA Quality Fertilizer 0-20-20	Manchester	.....	.....	.....	19.30	20.00	**18.90**	20.00	20.88	.....	.....
*AA Quality Fertilizer 5-8-7	Gerrish	5.00	4.80	.....	9.08	8.00	8.20	7.00	7.12	.....	.....
Agrico for New England 5-8-7	Plymouth	5.00	4.81	.....	7.78	8.00	**7.41**	7.00	7.50	2.00	2.13
AA Quality Fertilizer 5-10-10	Concord	5.00	5.00	.....	10.70	10.00	10.10	10.00	10.08	.....	.....
AA Quality Fertilizer 5-10-10	Manchester	5.00	5.01	.....	10.98	10.00	10.48	10.00	10.16	.....	.....
*AA Quality Fertilizer 5-10-10	Concord	5.00	4.87	.....	10.68	10.00	10.08	10.00	10.08	.....	.....
AA Quality Fertilizer 5-10-10	Laconia	5.00	5.01	.....	10.64	10.00	10.01	10.00	10.24	.....	.....
Agrico for Potatoes 5-10-10	Plymouth	5.00	4.90	.....	10.74	10.00	10.17	10.00	10.60	2.00	2.26
Agrico for Top Dressing 7-7-7	Concord	7.00	7.07	.....	7.56	7.00	7.24	7.00	7.50	.....	.....
Agrinite-All Organic Plant Food	Plymouth	8.25	8.51	.....	.....	.....	.....	.....	.....	.....	.....
Agrinite-All Organic Plant Food	Nashua	8.25	8.35	.....	.....	.....	.....	.....	.....	.....	.....
*Pulverized Sheep Manure	Plymouth	1.25	1.23	1.00	1.02	.....	.....	2.00	3.34	.....	.....
American Cyanamid Co. New York, N. Y.											
Aeroprills, Ammonium Nitrate	Concord	33.50	33.55	.....	.....	.....	.....	.....	.....	.....	.....
Apothecaries Hall Co. Waterbury, Conn.											
*Liberty Brand Fertilizer 3-12-12	Colebrook	3.00	3.47	.....	12.32	12.00	12.01	12.00	12.01	.....	.....

Liberty Brand Fertilizer 5-8-7	Manchester	5.00	5.01	.....	8.72	8.00	8.51	7.00	8.20	.....	.....
*Liberty Brand Fertilizer 5-10-5	Manchester	5.00	5.18	.....	11.42	10.00	10.72	5.00	7.10	.....	.....
Liberty Brand Fertilizer 5-10-10	Colebrook	5.00	5.18	.....	10.78	10.00	10.37	10.00	10.88	.....	.....
Liberty Garden Gro Fertilizer 6-7-4	Manchester	6.00	6.14	.....	9.42	7.00	9.28	4.00	4.90	.....	.....
*Bone Meal	Manchester	2.25	2.59	22.00	27.55	.....	.....	.....	.....	.....	.....
Armour Fertilizer Works Carteret, N. J.											
Armour Big Crop Fertilizer 5-8-7	Dover	5.00	4.76	.....	8.70	8.00	8.03	7.00	7.84	.....	.....
Armour Vertagreen 5-10-5	Keene	5.00	5.04	.....	10.78	10.00	10.33	5.00	5.85	.....	.....
Armour Big Crop Fertilizer 5-10-10	Keene	5.00	5.26	.....	10.21	10.00	9.42	10.00	8.08	.....	.....
Armour Big Crop Fertilizer 5-10-10	Dover	5.00	5.09	.....	11.14	10.00	10.19	10.00	10.64	.....	.....
Armour Vertagreen Plant Food Commercial Crops 6-12-12	Colebrook	6.00	6.03	.....	12.64	12.00	12.22	12.00	12.05	.....	.....
Armour Big Crop Fertilizer 7-7-7	Keene	7.00	6.57	.....	7.80	7.00	7.51	7.00	6.54	.....	.....
Armour Big Crop Fertilizer 7-7-7	Dover	7.00	6.91	.....	7.05	7.00	6.75	7.00	7.60	.....	.....
*Armour Vertagreen Plant Food for Commercial Use 8-8-8	Keene	8.00	7.84	.....	8.29	8.00	7.86	8.00	8.01	.....	.....
*Armour Vertagreen Plant Food for Professional Use 10-6-4	Dover	10.00	9.16	.....	8.20	6.00	7.73	4.00	4.88	.....	.....
*Armour Vertagreen for Professional Use 10-6-4	Keene	10.00	10.07	.....	6.25	6.00	5.82	4.00	4.40	.....	.....
Armour Big Crop Fertilizer 20% Superphosphate	Keene	.....	.....	.....	21.55	20.00	21.20	.....	.....	.....	.....
*Armour Bone Meal	Keene	2.30	3.11	23.00	24.80	.....	.....	.....	.....	.....	.....
*Armour Sheep Manure	Keene	1.50	1.51	1.00	1.30	.....	.....	2.00	4.64	.....	.....
Chilean Nitrate Sales Corp. 120 Broadway, N. Y., N. Y.											
Champion Brand Natural Chilean Nitrate	Manchester	16.00	16.08	.....	.....	.....	.....	.....	.....	.....	.....
Clinton Nurseries Clinton, Conn.											
*New Era Plant Food 5-12-9	Manchester	5.00	5.15	.....	13.76	12.00	13.74	9.00	10.50	.....	.....
*New Era Rose Food	Manchester	5.00	5.52	.....	10.84	10.00	10.01	5.00	6.20	.....	.....

* NOT Registered at time of sampling.

	Sample Drawn In	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
				Total		Available					
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Consolidated Rendering Co. Boston, Mass.											
Corenco (ACP) 0-14-14	Concord	.....	.....	.....	15.06	14.00	14.86	14.00	14.56	.....	.....
Corenco (ACP) 0-15-30	Concord	.....	.....	.....	15.64	15.00	15.20	30.00	**27.72**	.....	.....
Corenco (ACP) Fertilizer 0-20-20	Laconia	.....	.....	.....	20.90	20.00	20.27	20.00	19.72	.....	.....
Corenco (ACP) Fertilizer 0-20-20	Concord	.....	.....	.....	20.55	20.00	19.79	20.00	**18.12**	.....	.....
Corenco (ACP) 0-20-20	Concord	.....	.....	.....	19.85	20.00	19.74	20.00	19.76	.....	.....
Corenco Fertilizer 0-20-20	Concord	.....	.....	.....	19.20	20.00	18.49	20.00	**18.40**	.....	.....
Corenco (ACP) 0-20-20	Concord	.....	.....	.....	20.50	20.00	20.40	20.00	**18.40**	.....	.....
Corenco (ACP) 0-20-20	Plymouth	.....	.....	.....	21.60	20.00	20.92	20.00	**18.48**	.....	.....
Corenco Complete Manure 4-12-4	Epping	4.00	3.84	.....	13.14	12.00	12.42	4.00	5.28	.....	.....
Corenco 4-12-16 Ladino Special	Colebrook	4.00	3.90	.....	12.64	12.00	12.01	16.00	16.00	.....	.....
Corenco-Organic Turf Fertilizer 5-4-0	Plymouth	5.00	4.82	4.00	7.10	.....	.....	.....	.....	.....	.....
Corenco Fertilizer 5-8-7	Lebanon	5.00	5.10	.....	9.12	8.00	8.72	7.00	7.56	.....	.....
Corenco 5-8-7 Potato and General Crop	Conway	5.00	5.01	.....	8.88	8.00	8.61	7.00	7.18	.....	.....
Corenco Home Garden 5-10-5	Concord	5.00	5.15	.....	11.04	10.00	10.55	5.00	5.10	.....	.....
Corenco Home Garden Fertilizer 5-10-5	Lebanon	5.00	5.27	.....	11.14	10.00	10.67	5.00	5.12	.....	.....
*Corenco Rose Special 5-10-5	Concord	5.00	5.02	.....	11.56	10.00	10.30	5.00	6.00	.....	.....
Corenco Fertilizer 5-10-10-1	Epping	5.00	5.62	.....	10.84	10.00	10.52	10.00	10.40	1.00	1.34
Corenco Brand Fertilizer 5-10-10-2	Brentwood	5.00	5.19	.....	10.74	10.00	10.49	10.00	10.32	2.00	4.60
Corenco Fertilizer 7-7-7	Lebanon	7.00	7.01	.....	8.02	7.00	7.77	7.00	7.36	.....	.....
Corenco 7-7-7 Complete Fruit and Top Dressing	Colebrook	7.00	6.85	.....	7.66	7.00	7.48	7.00	7.12	.....	.....
Corenco Landscape Fertilizer 8-6-4	Keene	8.00	7.92	.....	6.90	6.00	6.50	4.00	4.64	.....	.....
Corenco 8-16-16	Concord	8.00	7.87	.....	18.63	16.00	18.02	16.00	**14.96**	.....	.....
Corenco Fertilizer 8-16-16	Lebanon	8.00	8.08	.....	16.44	16.00	15.89	16.00	16.80	.....	.....
Corenco Brand Fertilizer 8-16-16	Brentwood	8.00	8.11	.....	16.26	16.00	15.72	16.00	16.24	.....	.....
Corenco Brand Fertilizer 8-16-16	Plymouth	8.00	7.78	.....	18.22	16.00	17.89	16.00	**15.48**	.....	.....
*Corenco 10-10-10	Concord	10.00	9.54	.....	11.36	10.00	10.55	10.00	10.72	.....	.....

Corenco Fertilizer 10-10-10	Epping	10.00	10.29	.....	10.55	10.00	9.75	10.00	10.65	.....	.....
Corenco Brand Sheep Manure	Concord	2.00	2.05	1.00	0.52	.....	.....	2.00	4.32	.....	.....
*Corenco Dried Cow Manure	Concord	2.00	2.49	1.00	1.01	.....	.....	1.00	2.45	.....	.....
Corenco Ground Bone	Gerrish	1.50	1.66	27.00	30.73	.....	.....	.....	.....	.....	.....
Corenco (ACP) 20% Superphosphate	Concord	.....	.....	.....	20.25	20.00	20.01	.....	.....	.....	.....
*Corenco (ACP) 20% Superphosphate	Laconia	.....	.....	.....	20.55	20.00	20.35	.....	.....	.....	.....
Davison Chemical Corp. Baltimore, Md.											
*Davco Granulated Fertilizer 5-8-7	Manchester	5.00	5.65	.....	8.64	8.00	8.50	7.00	6.08	.....	.....
*Davco Granulated Fertilizer Turf and Garden Food 5-10-5	Manchester	5.00	5.01	.....	10.40	10.00	10.28	5.00	6.24	.....	.....
*Davco Granulated Fertilizer 5-10-10	Concord	5.00	5.16	.....	10.28	10.00	10.08	10.00	10.90	.....	.....
*Davco Granulated Fertilizer 10-10-10	Concord	10.00	10.57	.....	10.06	10.00	10.01	10.00	10.02	.....	.....
*Davco Granulated Superphosphate 20%	Concord	.....	.....	.....	21.40	20.00	20.80	.....	.....	.....	.....
Eastern States Farmers' Exchange West Springfield, Mass.											
Eastern States Fertilizer 0-15-30	Concord	.....	.....	.....	15.47	15.00	15.14	30.00	29.56	.....	.....
Eastern States Fertilizer 0-15-30	Concord	.....	.....	.....	14.44	15.00	14.20	30.00	30.60	.....	.....
Eastern States Fertilizer 5-15-15	Concord	5.00	5.69	.....	15.34	15.00	15.01	15.00	15.60	.....	.....
Eastern States Fertilizer 8-16-16	Concord	8.00	8.27	.....	16.68	16.00	16.36	16.00	17.08	1.00	1.55
Eastern States Fertilizer 10-10-10	Concord	10.00	10.05	.....	10.82	10.00	10.62	10.00	10.30	1.00	1.35
Faesy & Besthoff Inc. Hicksville, L. I., N. Y.											
F & B Pure Bone Meal	Manchester	2.47	2.47	23.00	28.87	.....	.....	.....	.....	.....	.....
Fox Point Chemical Co. East Providence, R. I.											
Old Fox Fertilizer 0-20-0	Dover	.....	.....	.....	20.90	20.00	20.64	.....	.....	.....	.....
Old Fox Fertilizer 5-8-7-2	Dover	5.00	5.31	.....	8.43	8.00	6.95	7.00	8.40	2.00	1.45
Old Fox Fertilizer 5-8-7-2	Exeter	5.00	5.01	.....	9.50	8.00	9.14	7.00	7.10	2.00	2.53
Old Fox Fertilizer 5-10-10-2	Dover	5.00	5.01	.....	9.75	10.00	8.58	10.00	10.80	2.00	2.09
Old Fox Fertilizer 7-7-7	Dover	7.00	6.87	.....	7.60	7.00	7.20	7.00	7.28	.....	.....
Old Fox Fertilizer 7-7-7	Exeter	7.00	7.12	.....	7.38	7.00	7.18	7.00	7.50	.....	.....
Old Fox Turf Fertilizer 8-6-2	Exeter	8.00	8.19	.....	7.44	6.00	7.25	2.00	1.12	.....	.....
Old Fox Fertilizer 10-10-10	Concord	10.00	10.07	.....	10.60	10.00	10.41	10.00	10.16	.....	.....
Old Fox Fertilizer 10-10-10	Benton	10.00	10.08	.....	10.74	10.00	10.55	10.00	10.01	.....	.....

* NOT Registered at time of sampling.

	Sample Drawn In	Nitrogen		Phosphoric Acid				Potash		Magnesium Oxide	
				Total		Available					
		Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
International Minerals & Chemical Co. Woburn, Mass.											
International Fertilizer 5-10-10-1	Manchester	5.00	5.03	.....	10.67	10.00	10.01	10.00	10.50	1.00	1.41
International Fertilizer 5-10-10-2	Keene	5.00	4.91	.....	10.48	10.00	10.10	10.00	10.60	2.00	4.98
International Fertilizer 6-12-12-2	Colebrook	6.00	5.77	.....	12.72	12.00	12.44	12.00	12.60	2.00	2.23
*International Fertilizer 7-7-7-1	Manchester	7.00	6.85	.....	7.88	7.00	7.55	7.00	7.70	1.00	1.55
*International Fertilizer 8-6-2-1	Keene	8.00	7.72	.....	6.80	6.00	6.50	2.00	2.90	1.00	2.69
International Fertilizer 8-16-16	Colebrook	8.00	7.83	.....	16.64	16.00	16.13	16.00	16.90	.....	.....
International 20% Superphosphate	Concord	.....	.....	.....	20.63	20.00	20.39	.....	.....	.....	.....
International 20% Superphosphate	Manchester	.....	.....	.....	20.70	20.00	20.50	.....	.....	.....	.....
International 20% Superphosphate	Concord	.....	.....	.....	20.80	20.00	20.50	.....	.....	.....	.....
*International Sheep Manure	Keene	1.25	1.51	1.00	1.48	.....	.....	2.00	4.96	.....	.....
Merrimack Farmers Exchange, Inc. Concord, N. H.											
Merrimack Brand Fertilizer 5-8-7	Plymouth	5.00	5.10	.....	9.08	8.00	8.43	7.00	8.00	.....	.....
Merrimack Brand Fertilizer 5-8-7	Concord	5.00	5.13	.....	8.46	8.00	9.19	7.00	8.00	.....	.....
Merrimack Brand Fertilizer 5-8-7	Keene	5.00	5.00	.....	9.19	8.00	8.82	7.00	7.92	.....	.....
Merrimack Brand Fertilizer 5-10-10	Plymouth	5.00	5.22	.....	10.94	10.00	10.32	10.00	10.08	.....	.....
Merrimack Brand Fertilizer 5-10-10	Keene	5.00	5.23	.....	10.35	10.00	10.01	10.00	10.16	.....	.....
Merrimack Brand Fertilizer 5-10-10	Concord	5.00	5.14	.....	10.50	10.00	10.08	10.00	10.24	.....	.....
Merrimack Brand Fertilizer 7-7-7	Concord	7.00	7.04	.....	7.98	7.00	7.76	7.00	7.70	.....	.....
Merrimack Turf Green 8-6-4	Concord	8.00	**7.32**	.....	7.70	6.00	7.29	4.00	5.68	.....	.....
Merrimack Brand Fertilizer 8-16-16	Benton	8.00	7.85	.....	16.05	16.00	15.60	16.00	15.60	.....	.....

Natural Products Food Co. Oklahoma City, Okla.											
Longhorn Brand Cattle Manure	Manchester	2.00	2.01	1.00	1.07	.....	.....	2.00	2.80	.....	.....
Ramshorn Brand Sheep Manure	Manchester	2.00	2.00	1.00	1.16	.....	.....	2.00	3.52	.....	.....
Potash Co. of America Carlsbad, New Mexico											
*Granular Muriate of Potash 60%	Colebrook	.....	.....	.....	.....	.....	.....	60.00	61.12	.....	.....
Sagadahoc Fertilizer Co. Bowdoinham, Maine											
Sagadahoc Fertilizer 5-10-10-2	Colebrook	5.00	5.01	.....	10.53	10.00	9.79	10.00	10.80	2.00	2.47
Sagadahoc Fertilizer 8-16-16-2	Colebrook	8.00	7.92	.....	16.66	16.00	16.07	16.00	16.40	2.00	2.24
*Sagadahoc Bone Meal	N. Conway	2.00	1.83	18.00	21.05	.....	.....	.....	.....	.....	.....
*Sagadahoc Sheep Manure	N. Conway	2.00	1.62	2.00	3.33	.....	.....	2.00	1.56	.....	.....
O. M. Scott & Sons Co. Marysville, Ohio											
Scott's Weed & Feed 7-11-5	Manchester	7.00	7.30	.....	11.48	11.00	11.14	5.00	6.50	.....	.....
Scott's Turf Builder 9-7-4	Manchester	9.00	**8.17**	.....	9.10	7.00	8.71	4.00	4.02	.....	.....
Swift & Company Boston, Mass.											
Vigoro Complete Plant Food 5-10-5	Manchester	5.00	5.14	.....	10.94	10.00	10.22	5.00	5.30	.....	.....
Swift's Red Steer Plant Food	Manchester	5.00	5.56	.....	8.30	8.00	8.07	7.00	7.28	.....	.....
Walker Gordon Lab. Co. Plainsboro, N. J.											
Bovung Cow Manure	Plymouth	2.00	1.90	1.00	1.33	.....	.....	1.00	2.60	.....	.....

* NOT Registered at time of sampling.